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## A Hot and Flaming Start to 2003

*By Ian Donoghue, General Manager*

### Special points of interest:

- \* Canberra Fires
- \* Proposed dates for the Hydstra User Group 2003
- \* Two New Product Development Staff
- \* New Account Management Program implemented

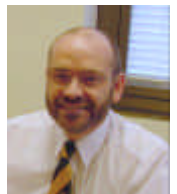
Hydstra experienced a hot and flaming start to 2003, with wild bushfires striking the suburban area surrounding our Canberra office—several houses less than a kilometre from the office were destroyed. Whilst our Canberra office was closed as a result of the fires, our plan for a disaster of this kind was put into action with the Hobart office taking over the support function—proving that we can continue to provide client service in almost any situation.

Speaking of client service, this newsletter also highlights a key client service initiative, being the appointment of Client Account Managers. Appointments have been made for key Australian clients who will be contacted in the near future. The coming months will see the appointments extended to all corporate clients.

Outlined below are the tentative dates for this years User Group meetings. We will confirm these within the next month and send advice to clients. Please mark these dates in your calendar, as a major event at these meetings will be a workshop on the functionality requirements and process for the merged / new product. These workshops will provide clients with an opportunity to have direct input into the process.

This newsletter also provides clarification of current product naming—gone are Hydrol, TimeStudio, HYDSYS and HYDRON.

Finally, as a number of clients prepare for the upcoming Easter holiday season, please have an enjoyable and safe holiday break.



Ian Donoghue

## Hydstra User Group—Tentative Dates

This year we are proposing to hold User Group meetings in Australia, New Zealand, North America, South Africa and Europe.

The proposed dates are as follows:

Aug 27/28	Australian User Group in Tasmania
Sep 01	New Zealand User Group in Auckland
Sep 03	North American (West Coast) User Group in California
Sep 05	North American (East Coast) User Group in Florida
Sep 09	European User Group in the United Kingdom
Sep 11	Southern Africa User Group in Pretoria

These dates haven't yet been confirmed so keep your eyes out for more details in the next Hydstra Newsletter in June.

## Canberra Fires

Staff in Hydstra's Canberra office had a close call recently when a firestorm hit Weston Creek, where the office is located. The fires were started by lightning in the mountains surrounding Canberra and quickly spread towards the city, assisted by the extremely dry weather and strong winds. The fires destroyed over 500 homes in the surrounding suburbs and while all staff were affected by the fires, fortunately nobody lost their home.

Despite the scale of the disaster, Hydstra's support services continued as normal during the weeks following the fire, which is one of the benefits of having offices in several different cities. Staff in Hobart were able to continue with business as usual while Canberra staff took time to look after their homes.

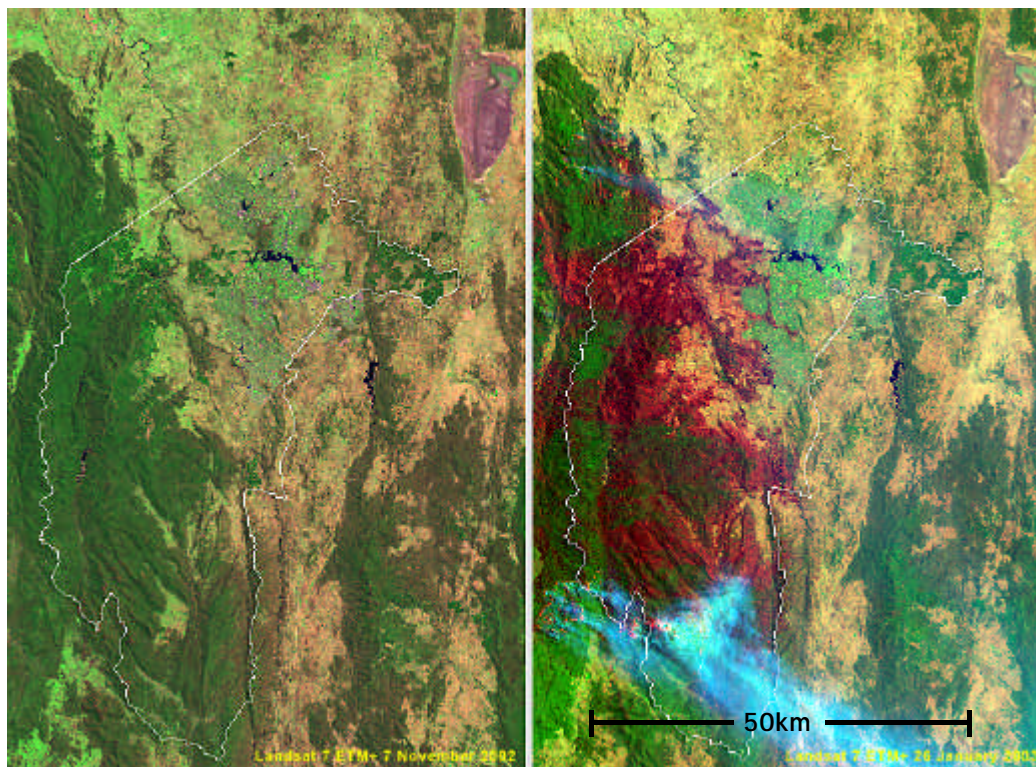
Gabrielle Evans, Hydstra's Client Administration Manager, and her husband John had the closest call. As the fire approached John backed the car out and left it in front of the house ready to make a quick escape if necessary. Minutes later the sky began raining fire embers and the front garden went up in flames, closely followed by the car. Fortunately the fire had come on so quickly that they had not had time to put any valuables in the car!

Although the back yard was in flames as well, with woodpile blazing merrily, Gay and John managed to escape over the back fence and find their way to safety. When they returned to their house on Sunday morning the doormat was still smouldering, their plastic garbage bin and garden trash pack had vaporised, the front window was broken, but miraculously the house was intact.

Canberra is slowly returning to normal as the rebuilding has begun. The first rain of the year was especially welcomed as it turned the hills from a foreboding black to a refreshing green. Thanks to everybody who let us know that were thinking about us during the fires.



John and Gabrielle Evans next to their burnt-out car



Before and After Images showing the impact of the Canberra Bushfires

## Introducing Andrew Pratt and Ben Bildstein

Hydstra would like to welcome Andrew Pratt and Ben Bildstein to the Product Development team.

Andrew completed a Bachelor of Engineering (Hons) in 2001 majoring in Computer Systems at the University of Tasmania. Since then he has worked at Turnaround Solutions and the Department of Police and Public Safety in Hobart.

The majority of Andrew's consultant work has been in developing C++ and Java applications integrated with Oracle and Microsoft SQL Server back-ends on various flavours of Unix and Windows. He enjoys playing guitar, soccer, visiting tropical destinations, and listening to vast quantities of music. Occasionally, he doesn't mind a game of tennis or golf either.

Ben started work as a Graduate Technical Programmer with Hydstra at the beginning of the year, having recently completed a Bachelor of Engineering at the University of Tasmania with a major in Computer Systems.

Ben has found the transition from university to work easy, after taking part in both a Hydstra training course and a future directions workshop before starting on the job. When Ben's not at work he likes to listen to a broad range of music, play multi-player computer games or play and study the ancient oriental board game of Go.



Andrew Pratt



Ben Bildstein

## Hydstra Product Names

There has been some confusion over what to call various Hydstra products, since the HYDSYS, HYDRON and TimeStudio products were brought under the same umbrella. To clear up the confusion, here is a list of all the products in the Hydstra Product Suite along with their original names.

Hydstra/TSM	TimeStudio Time Series Manager, including Water Quality & Mapping
Hydstra/TS	HYDSYS/HYDRON Time Series
Hydstra/WQ	HYDSYS/HYDRON Water Quality
Hydstra/MA	HYDSYS/HYDRON Mapping
Hydstra/TE	TimeStudio Telemetry & Scheduler
Hydstra/GW	HYDSYS/HYDRON Ground Water
Hydstra/MO	HYDSYS/HYDRON Modsyn
Hydstra/MOD	TimeStudio Modelling

## Account Management Program

Hydstra is establishing an Account Management program to provide corporate customers with an even higher level of service than has previously been available. Each corporate customer will be assigned a Client Manager who will take personal responsibility for all issues relating to that client. We are starting the program with corporate clients in Australian capital cities with a plan to cover all corporate clients in the future.

By taking the time to understand the needs of your organisation, your Client Manager will be able to provide quick and accurate advice on any issues that arise. While this will raise the level of direct technical support available, it will also enable Client Manager's to provide strategic advice to clients, such as:

- \* **Corporate IT advice.** You can talk to us about any IT issues that affect your investment in Hydstra. We have a long history in supporting complex software in large computing environments and we keep up with the latest in technical developments and corporate computing issues.
- \* **Streamlining your operations.** Your Client Manager can provide advice on how to get the most out of the automation features available in the Hydstra Product Suite. We can develop systems to automate your data import, data validation and data publishing processes.
- \* **Quality Assurance Procedures.** There are many tools available that can help you identify issues in your system before they become problems. We can show you how to use the tools at your disposal.
- \* **Assisted Upgrades.** We can take you through the upgrade process, introduce your staff to new features and then work with you to ensure that the upgrade settles in smoothly. We can also identify any systems built around Hydstra that may be vulnerable to versional changes, so that you can be sure that all supporting systems will continue to operate after the upgrade.
- \* **Training.** We can provide training on how to get the most out of the tools available in the Hydstra Product Suite.

The Account Management program will allow corporate users of Hydstra to exploit the wealth of knowledge that Hydstra has accumulated in its long history working with environmental monitoring groups around the world.

Client Manager's will take personal responsibility for all issues relating to their client.

## Are We Keeping Code That You Don't Use?

We maintain quite an amount of code on behalf of individual user organisations - often code which is no longer being used. We are keen to reduce our maintenance load, and to prevent clients paying unnecessary fees on unwanted code, so it is worth taking the time to tidy up from time to time.

Hydstra/TS users can scan programs (\*.EXE), batch jobs (\*.BAT) and perl scripts (\*.PL) in the \hyd\sys\run directory. Files named with your organisation code as the first 2 or 3 letters are currently being maintained on your behalf, so please let us know if they are no longer needed.

All programs and scripts should be documented in the Hydstra Help file. If you don't know what a program does, get back to us and we can give you more information - however you can look at batch jobs and perl scripts in a text editor, which should provide some clues.

Are you paying Hydstra to maintain obsolete programs?

## Hydstra/TS v8.16 Released

Version 8.16 of Hydstra/TS has been released. Upgrades are freely available to licensed users as a part of your ongoing licence agreement. If you would like a copy of v8.16 then please contact Debbie Cockburn at [support@hydstra.com](mailto:support@hydstra.com).

Many of the changes in v8.16 were internal changes supporting future Oracle development, but some of the new features in v8.16 include:

- \* HYPXPLORER released (see article in the Product Development Update)
- \* Ploticus Plotting Software provided
- \* New Perl modules available for communications and PDF documents
- \* Access to several new keywords in HYBATCH, including any station-related information stored in STNINI
- \* Conversion utility to convert locations to the GDA94 or MGA94 datum.
- \* New program, HYPGAUGE – Pressure Gauge Performance Plot
- \* New conformance tests in HYAUDIT, also with the ability to record the history of test results in a time-series trace.

## HYDBU On The Way Out

HYDBU is an old Hydstra/TS DOS program for manipulating database tables, which was replaced by a new Windows program called HYDBUTIL in version 8. HYDBU has continued to operate in v8 so that batch jobs relying on it will continue to work but HYDBU is now being removed, so you should check for references to HYDBU in any batch processes.

You can scan for files containing references to HYDBU using the “Search” option in Windows Explorer. You will need to convert any references to HYDBU to use HYDBUTIL instead. Tips for making the conversion include:

- \* HYDBUTIL needs START /W in front of it in scripts. This will force a batch job to wait until HYDBUTIL has finished running before continuing on to the next step.
- \* The SDF text format is not supported any longer so you will need to use a CSV format for text representations of database data. The easiest way to find the format expected by HYDBUTIL is to export existing data using the EXPORT option.
- \* The parameters to some HYDBU functions may be different in HYDBUTIL. For example, most HYDBUTIL commands request a report file as a parameter—check the documentation for each command.

Batch scripts relying on HYDBU will need to be converted to use HYDBUTIL

## Sending Executable Files by Email

With the ongoing threat of viruses, it is becoming increasingly difficult to send and receive executable files via E-mail. This issue affects EXE files along with batch jobs (\*.BAT) and perl scripts (\*.PL), which are routinely distributed by Hydstra’s Support Team. To overcome this problem we have set up an FTP site where files can be exchanged. Please contact Damian Skinner at [support@hydstra.com](mailto:support@hydstra.com) if you have any problems sending or receiving an executable file to/from Hydstra.



## Yabbie—Field Stream Gauging Data Recorder and Calculator

*By Bruce Young, Hydstra Technical Programmer*

At last, a rugged hand-held device that provides a means of recording stream gaugings and uploads this field data directly to Hydstra/TSM and Hydstra/TS data management systems. Results for flow and wetted perimeter can be calculated and displayed on the hand-held device in the field.

Yabbie software runs on a **PSION MX workabout** hand-held computer. This computer is splash and dust proof and when secured in an EWA-Marine case is fully water proof thus making it suitable for the field applications associated with stream gaugings.

Yabbie is now out in the field and is being used by Hydro Tasmania's Resource Monitoring and Information (RMI) Hydrographers. In the first week of March this year a number of rivers in the North-East of Tasmania were reported as having very low flow rates as a consequence of drought and irrigation. RMI Hydrographers have been monitoring these river flows and reporting the actual flow rates back to the water control authority. This immediate reporting of environmentally critical and politically sensitive results has been improving water resource management in the first week of use of the Yabbie system.

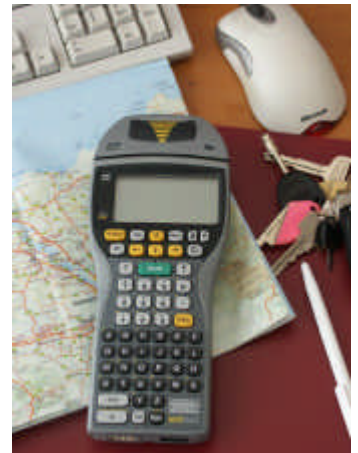
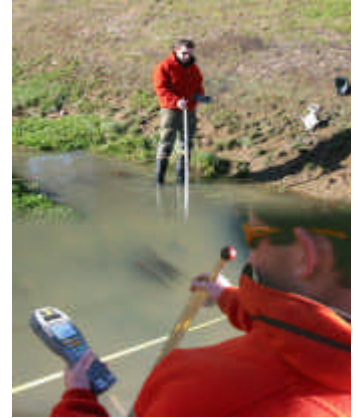
Stream gaugings are performed to determine the stream flow at a particular section and the associated level for this flow. On site the Hydrographer will establish a site where the gauging section will be taken then records the stream level into Yabbie. Then proceeding across the stream, vertical positions are established and stream depth and flow angle are recorded, then depending on the flow conditions observed by the Hydrographer one or more velocity recordings. propeller revolutions and times are automatically recorded from current meters or can be manually entered. Meter equations downloaded from Hydstra/TSM or Hydstra/TS provide the calibrations and conversions from propeller revs to flow velocity. Yabbie will provide calculations for flow and wetted perimeter for the section once a minimum of three vertical sections have been entered, .

The PSION hand-held computer has a screen capable of displaying graphics 240 by 100 pixels or text 28 columns by 7 rows, the screen has lighting and contrast adjustment. It has a full alpha numeric key pad with a number of special PSION function keys. The Psion has a standard 9 pin serial interface that is used for connection to current meters. There is also a PSION proprietary serial interface/power supply that connects to the PSION docking cradle that provides the interconnection with a PC running Hydstra/TSM or Hydstra/TS. The PSION has a bar code scanner that can be used with other software not associated with Yabbie. The PSION runs on rechargeable batteries which have sufficient energy reserve to provide for a full day of field work. There is also a small hearing aid style battery to provide Operating System security if the main rechargeable batteries are flat.

Fig.1 below shows a typical startup screen for Yabbie.



Fig.1



A PSION hand-held computer fitted with a bar-code scanner at the top.

## Yabbie—Field Stream Gauging Data Recorder and Calculator (cont.)

An example of the results obtained from Yabbie for the gauging record at site 124.1 is shown in Fig.2 below.

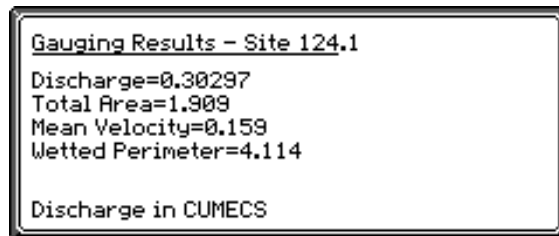


Fig.2

When the data is transferred to Hydstra/TSM the gauging forms are populated as part of this process

**Gaugings2**

Site Location: 124.1 North Contract Gaug[Group North contract]

Ref. No. Generate 6/2002 Applicable Rating

Measuring Location square channel no.2

Mean Crt metres 0.100 Change Rate mm/hr

Mean Date/Time 03/12/2002 @ 13:33:50 Calculate..

Quality Good-Q1

Observer johnston

Main ngs N.

Estimated Component (cumeecs) 0.000

Gauged Component (cumeecs) 0.0

Start Rank left

Method... Levels... Comments... Verticals...

Discharge cumeecs	Area sq mtrs	Mean Vel. m/sec
0.302	1.909	0.159

Wet Perim. mtr 4.114 Deviation mm cumeecs

Vertical Summary  
 56.1 x 2.0 M.U

Manual Edit ☐ Calculate..

< < Rec 3 of 6 > > New Retrieve Save Delete

## Yabbie—Field Stream Gauging Data Recorder and Calculator (cont.)

The screen dump below shows the vertical information for the gauging above. Note the velocity of 0.28931 at a depth of 0.088 for vertical number 4.

**Gauging Verticals**

Vert	Time	Distance mtrs	Depth mtrs	Angle	Meter	Prop	RPC
1	14:22:00	1.350	0.000	0.0	40	1	1
2	14:23:00	1.550	0.130	0.0	40	1	1
3	14:24:00	1.700	0.200	0.0	40	1	1
4	12:30:00	1.850	0.220	0.0	40	1	1
5	14:32:00	2.000	0.250	0.0	40	1	1

Comments for current Vertical:

Velocities for current Vertical:

Depth mtrs	Contacts	TimePeriod	Velocity
0.088	47	41.1	0.28931

OK

Cancel



Bruce Young



## Conformance Tests in Hydstra/TSM

*By Stuart Allie, Senior Technical Programmer*

Hydstra/TSM now provides a mechanism for testing sample data for conformance with user-defined criteria. These conformance tests are available through the new general script environment, and also through the sample values reports. The idea is to associate one or more conformance tests with a given site, location, and parameter.

In this case, the sites and locations are described through "Record Groups" and so a collection of related sites and locations can be referred to in a simple way. For each such group, there can be several conformance tests – each test is checked in turn, until one fails. The conformance classification (eg. "health", or "aesthetic") associated with that test is then reported, along with the actual test used.

An override facility is provided so that alarms relating to particular tests can be overridden. For example, one might want to override a test to suppress alarm messages while remedial work is carried out then remove the override to reactivate the alarms. When performing the conformance tests, it is possible to specify whether or not to apply overrides.

**ConformanceTests2**

Param: 408.00 + Chlorine Residual (Supply) (ppm)

Location List: Locations:Supply Refresh

Finish Time: 01/01/2100 @ 00:00:00

Comments:

**Non Conformance Criteria**

Test	Classification
x < 0.2	Health
x > 2	Health
x > 1	Aesthetic

**Override Values**

Site.Loc.ShortName	OverrideLow	OverrideHigh
49.1 Claremont Trunk Main [Supply]		
55.1 Richmond Res [Supply]		
56.1 Cobbs Hill Supply [Supply]		
68.1 Sorell Res supply [Supply]		
69.1 Titanic Ice [Cmbrge] [Supply]		

Navigation: [K] < Rec 2 of 2 > [X] New Retrieve Save Delete [Lock Icon]

Conformance Tests Form

## Conformance Tests in Hydstra/TSM (continued)

The functions available in the scripting language to apply conformance tests are:

```
hConf = CONFORMANCE_TEST_CREATE(nParam, nSite, nLoc)  
; create a new conformance test object for the given site,  
location, and parameter - returning a handle to the object
```

```
nResult = CONFORMANCE_TEST_CHECK(hConf, nType, nValue, nTime,  
sConformance, sTest)  
; perform a conformance test using the given object (hConf),  
of type nType (see below), for the sample value nValue, at  
time nTime, returning the result of the test (see below), and  
the corresponding conformance class in sConformance, with the  
test used returned in sTest.
```

```
nResult = CONFORMANCE_TEST_FREE(hConf)  
; destroy the conformance test object referred to by hConf.
```

The test type passed to the CONFORMANCE\_TEST\_CHECK function is one of three values:

Type = 0 : no override testing

Type = 1 : use override testing, but still do and report normal conformance testing

Type = 2 : use override testing, but don't bother with normal conformances if overridden

The result of the conformance test is also one of three values:

Result = 0: conforming value

Result = 1: non-conforming but overridden

Result = 2: non-conforming, and not overridden

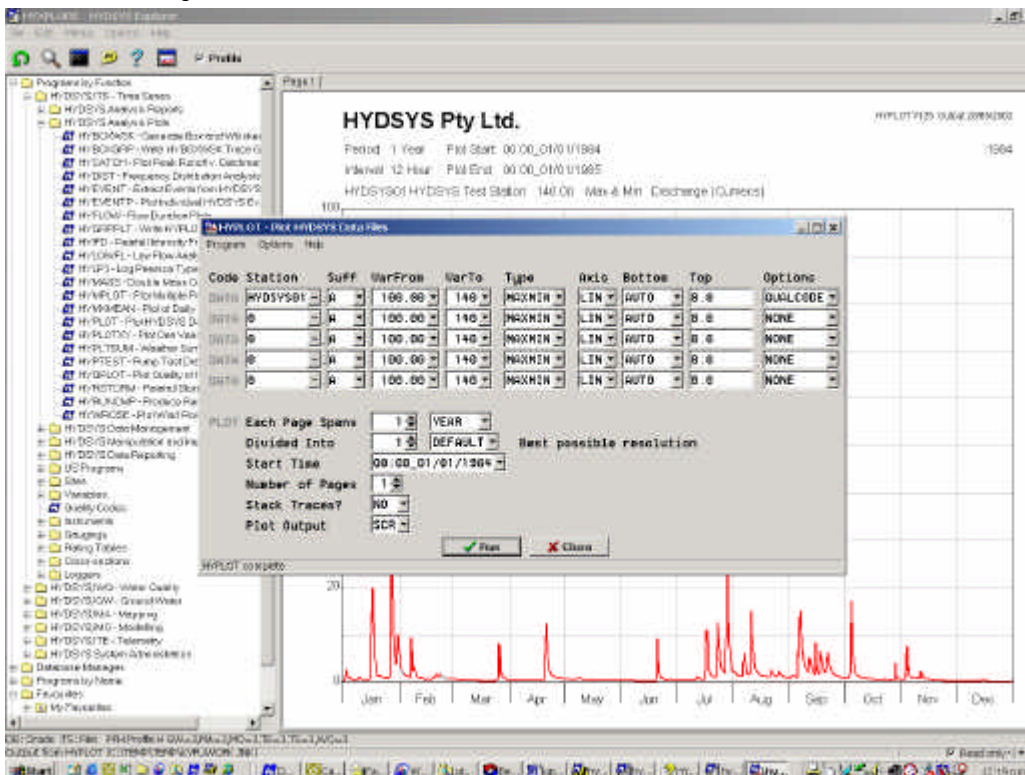


Stuart Allie

## HYXPLORE—A New View of Your Hydstra/TS Archive

HYXPLORE is a new program in Hydstra/TS v8.16 that provides an Explorer-style interface to your programs and data. HYXPLORE can be used as an alternative to HYMENU for launching programs, although it can also allow you explore your hydrometric and supporting data. HYXPLORE represents another step in the integration between Hydstra/TS and Hydstra/TSM, which already contains an explorer type interface.

HYXPLORE lists programs and data files in a hierarchical tree structure that can be expanded and contracted. When you double-click on a program item, that program is started and any output is displayed in the right-hand pane of HYXPLORE. When you double-click on a data file, it is opened with the program associated with the file, such as the Data Manager's Workbench.



HYXPLORE uses XML to define menu entries, which provides a lot of flexibility in the way it can be configured. Static menu entries can be added using an XML editor, or you can link to a script or program to generate menu entries as they are required at runtime.

Here are some ideas on how you could benefit from HYXPLORE:

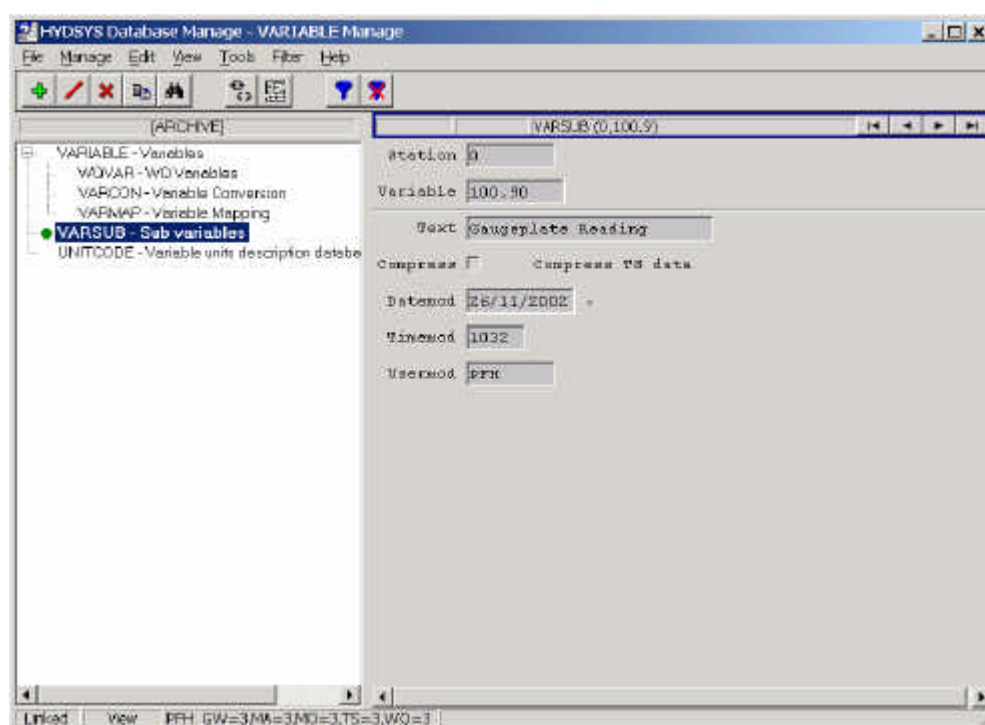
- \* Build work processes around Hydstra/TS. For example you could run HYAUDIT to generate a list of stations with potential problems. These stations could then be listed in a sub-menu, where they could be opened in the Data Manager's Workbench.
- \* Provide a data-centric view of your archive. For example you could provide a list of all the different groups in the Groups system. Double-clicking on a group would provide a list of all the stations in that group, which could then be opened.
- \* Consolidate your operations into a common interface. The flexibility in HYXPLORE allows you to launch any scripts or programs, not just those from Hydstra.

## Compression of Raw Data Files

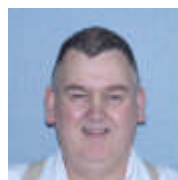
*By Peter Heweston, Senior Executive Consultant*

Hydstra/TS compresses time-series data in a number of ways as it writes out new blocks. One of the compression techniques used is to remove redundant points, for example runs of zero rainfall, or water level points which lie on a straight line. You can control whether or not points are removed in two ways - you can use the HYCONFIG variable COMPRESSTS in the [Time Series] section to change the default from Yes to No. This will prevent any points from being removed (though VARSUB may then turn ON compression).

Alternatively you can control compression on a subvariable by subvariable basis by using the Compress flag in VARSUB. This can be useful if you wish to turn off compression on a small number of variables, for example manual readings, where the presence of a reading is important.



As a guideline, we would suggest that you remove compression from all manually entered data, and that you consider removing compression from water level data as well.



Peter Heweston

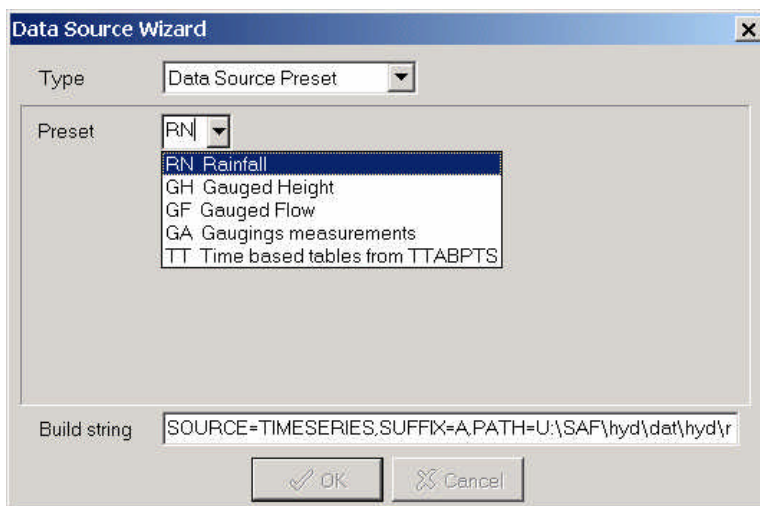
## Separating Rainfall Data from the Main Archive

We encountered a situation recently at a client site where the client had a large amount of rainfall data from the Weather Bureau - nearly 9000 stations of it. The rainfall data was a nuisance to most users as it made directory scans very slow, and they rarely used it, but had high value to modellers and hydrologists as they needed access to the data.

The solution we suggested was to move the rainfall to a directory under HYDPATH, eg \hyd\dat\hyd\rain, and use a special datasource to access it. The datasource entry (in DATASRC.INI) was as follows:

```
RN = SOURCE=TIMESERIES,SUFFIX=A,PATH=&hyddpath.rain\,Text=Rainfall
```

Note the use of the &hyddpath. macro, which is replaced by location of HYDPATH from HYCONFIG. Once you run HYMKHELP to update the drop-down lists, you see a drop-down option of RN appear in the Data Source Presets list:



## Warning on Removing Duplicates

Every database record in Hydstra/TS has a Globally Unique Identifier (GUID) field, which may be used to identify duplicate records. All Windows programs written by Hydstra will maintain the GUID for the life of the record, although older Hydstra programs and programs not written by Hydstra may introduce a blank GUID field into a database. Blank GUIDs may subsequently be seen as duplicates and at risk of deletion.

To avoid this problem you can set the GUIDJOURNAL variable in HYCONFIG.INI to "NO", forcing the HYDBUTIL DUPLICATES command to ignore the GUID field. You can also fix blank GUIDs using the HYDBUTIL GUIDREPAIR command.

If you are running HYIMPEXP in date-based mode you should run HYDBUTIL DUPLICATES in test mode and carefully examine the results. If there is a risk of deleting duplicates because of duplicate GUIDs you should run HYDBUTIL GUIDREPAIR before running HYDBUTIL DUPLICATES in production mode. If you remove duplicates AND you have GUID journaling enabled AND you have blank GUIDs you WILL lose data. This situation can occur if you have been using Clipper IMPEXP, which is not GUID -aware. In version 8.16.08 and later, blank GUIDs will not be deleted as duplicates, though they still need to be fixed with HYDBUTIL GUIDREPAIR.

All existing V8 users prior to V8.10 and V8.11 users with GUIDJOURNAL=yes in their hyconfig.ini are at risk of losing data if they remove duplicates while they have duplicate GUID values or empty GUID values.

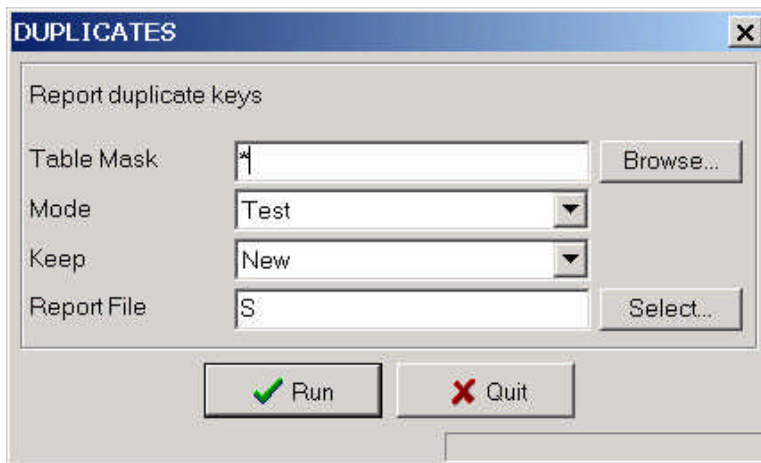


## Grooming Your Hydstra/TS Database Tables

Hydstra/TS currently uses Foxpro-compatible database tables (.DBF and .CDX) to store all database information. Foxpro tables by default retain deleted records within them until you explicitly pack the table to remove them. In addition Foxpro does not have automatic ways of preventing duplicates and orphans from appearing in your data - we rely on HYMANAGE to enforce the relational integrity of the database.

We strongly recommend that you regularly groom your database tables to identify problems that might have sneaked in. We suggest that at least once a month the system administrator should perform the following chores:

- \* Run HYDBUTIL DUPLICATES across all tables to identify and remove duplicate records. Run in test mode first to identify duplicate records, review the results, then rerun in production mode, to actually remove the records. Ensure you have good backups before removing duplicate records and check carefully afterwards!



- \* Run an "Orphan Records" report, from the Tools menu in HYMANAGE, across the SITE, VARIABLE, QUALITY and SYSADMIN manages (and WQMANAGE and GWALL if you have them).
- \* Run the "Validate Data" report, also from the Tools menu in HYMANAGE, across the SITE, VARIABLE, QUALITY and SYSADMIN manages
- \* Run HYDBUTIL SORT \* to sort all tables and recover lost space due to deleted records

Read the "Routine System Administrator Tasks" topic in the Hydstra Help File for more ideas on how to keep your system neat and tidy.

## Hobart Water—Process & Conformance Monitoring

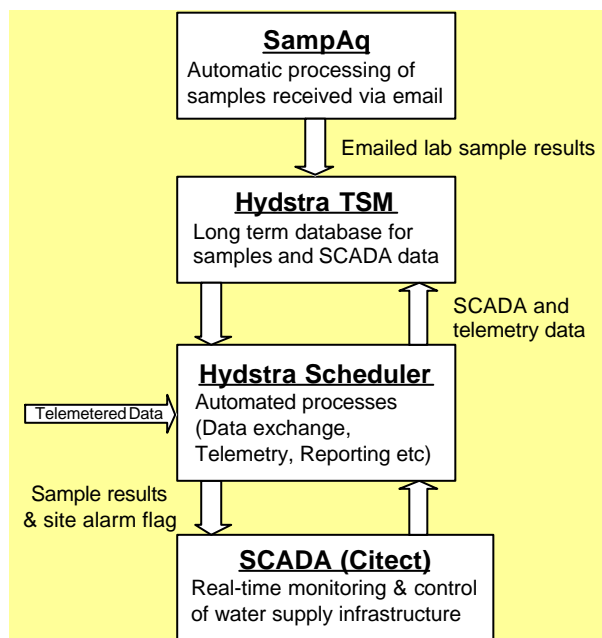
*By Stuart Allie, Senior Technical Programmer*

At Hobart Water, Hydstra/TSM is used for long-term storage of data from their Citect SCADA system and for storing water quality sample results. An automated processing system developed by Hydstra for Hobart Water, called SampAq, is used to receive water quality sample results via email and post them into the Hydstra/TSM database.

With the recent upgrade of their SCADA system, Hobart Water decided that having the results of the latest water quality sample results available on their SCADA screens would provide significant benefit to operators looking at real-time operations of the system. An additional requirement was that these results should include a “Site Alarm Flag” to indicate whether the readings were within acceptable limits. This follows a quality assurance procedure with any non-conformance being detected, corrected and re-submitted.

With the recent introduction of generalised scripts into Hydstra/TSM for the purpose of reporting on Key Performance Indicators (KPIs) and also a sophisticated framework for sample conformance testing, the Hobart Water requirement presented an excellent opportunity to test the capabilities of both these new features in a single project.

Transfer of raw lab sample results from Hydstra/TSM to SCADA had been previously setup using a scheduled transfer from samples as a time series source to SCADA as a time series output for each Site/Parameter combination. Similarly, transfer of SCADA data back to Hydstra/TSM was also setup as a scheduled transfer using SCADA as a time series source.



*Schematic of Hobart Water System*

## Hobart Water—Process & Conformance Monitoring (cont.)

In order to transfer Site Alarm Flags to SCADA, a generalised script was created that tests latest sample results for each measured parameter for conformance. This conformance checking script is run automatically by Scheduler and generates a single time series point for each location at which samples exist. The time series point is time-stamped with the current date and time and its value is the number of non-conformances (i.e.: a value of zero indicates that there were not any non-conformances). Where non-conformances are found, an associated comment is produced that includes details of each non-conformance including the classification (health, aesthetic or environmental), parameter name, parameter value and the test that failed.

The script works by querying the Samples table in Hydstra/TSM's relational database to extract the sites, locations, and parameters for the most recent samples. For each site, location and parameter, the sample values are then retrieved, and conformance tests are run. The results of the conformance tests are used to construct the alarm message, which is then passed to the SCADA system via Hydstra/TSM's output driver framework, and also written directly to a Hydstra/TSM time series archive.

Here is an example alarm message that is included as a comment associated with an alarm status value:

```
H 14/11/02 WatTemp C          10.46      x < 15
H 14/11/02 DO %Sat           89.7        x < 91
TOT 4 MORE AESTHETIC
```

This alarm message shows two "health" non-conformances, and tells us that there were a total of 4 alarms (only two are shown because of limitations of the SCADA display) with the additional alarms being "aesthetic" non-conformances. Each non-conformance shows the date of the sample, the name of the parameter sampled, the value of the sample, and the conformance test that triggered the alarm. This message is constructed entirely by the script and could contain any available information. It is also possible to write messages to files, for example to produce a report in HTML for viewing in a web browser.

This script uses many new features of the scripting environment that have been developed in order to make customised KPI reporting easier to develop and modify. The main new features used by the script are the ability to query the relational database tables used by Hydstra/TSM, and the facility to read time series from any data source and write time series to any time series output (including archive data).

Stuart Allie and Chris Misson recently installed upgraded software components and delivered the new conformance testing script to Hobart Water where they were assisted by Hobart Water staff Raquel Esteban and Ian Goudie. The installation was completed within a few hours on-site. Some follow-up work has since been completed to make the script more efficient (run time reduced from 40 minutes to 9) and to work around limits on comment sizes, however generally it has performed according to plan.



Ian Goudie & Raquel Esteban looking rather relaxed after the implementation of automated conformance monitoring



Stuart Allie



## Hydstra Pty Ltd

Engineering and Environmental Data Management Systems

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### Canberra Office

PO Box 3476, Weston Creek, ACT 2611  
Fax +61 2 6288 9061

### Hobart Office

GPO Box 355, Hobart, Tasmania 7000  
Fax +61 3 6230 5363

### San Diego Office-Hydstra America Inc.

10650 Scripps Ranch Blvd, Suite 206  
San Diego, CA 92131  
Fax (858) 578 1500

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### General Manager

Ian Donoghue  
Email donoghuei@hydstra.com  
Phone +61 2 6288 2024  
Mobile 0407 326 158

### Client Services

Bill Steen  
Phone +61 2 6288 2756  
Email steenw@hydstra.com

Dylan Evans (USA)  
Phone (858) 578 5562  
Email evansd@hydstra.com

### Product Development

Chris Misson  
Phone +61 3 6230 5584  
Email missonc@hydstra.com

### Marketing

Bill Steen  
Phone +61 2 6288 2756  
Email steenw@hydstra.com

Patrick Hayes (US)  
Phone (858) 578 5562  
Email hayesp@hydstra.com

### User Support

Phone +61 2 6288 2302  
Email support@hydstra.com

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Hydstra Pty Ltd provides an integrated suite of software and services for the management of environmental data, with a particular emphasis on renewable energy, water resources and urban water. Hydstra brings together two world leaders, HYDSYS and TimeStudio, to offer a complete solution to environmental data management. Hydstra software is aimed at organisations who need to manage large amounts of environmental data.

Hydstra provides leading edge solutions in:

- \* [Data Acquisition](#)
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- \* [Data Analysis](#)
- \* [Modelling and Simulation](#)
- \* [Automated Task Scheduling](#)

Hydstra also provides ongoing support to make sure that you continue to get the most you can out of the software.

- \* [Migrate your existing data archive](#)
- \* [Streamline your data acquisition procedures](#)
- \* [Set up automated data auditing and web publishing systems](#)
- \* [Ongoing training](#)

Hydstra has a proven track record in providing first-class software and support, with over 150 installations in 22 countries around the world.

Hydstra Pty Ltd is a wholly owned subsidiary of Hydro Tasmania and brings with it the support of the Hydro Tasmania Consulting Division.

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